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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,494	01/22/2002	Michael Heckmeier	MERCK 2362	8714

23599 7590 10/22/2003

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EXAMINER

CHOWDHURY, TARIJUR RASHID

ART UNIT PAPER NUMBER

2871

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

10/031,494

Applicant(s)

HECKMEIER ET AL.

Examiner

Tarifur R Chowdhury

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-24 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01/22/02 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is

requested in correcting any errors of which applicant may become aware in the specification.

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "the twist angle" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-11 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Theo Welzen (Welzen), EP 0727 691 A.

7. Welzen disclose an active matrix transmission type liquid crystal switching element comprising a liquid crystal layer having a starting orientation that essentially parallel to the substrates and essentially non-twisted (page 3, lines 1-2), at least a polarizer (page 3, line 3), a device for producing an electrical field that is oriented essentially in parallel to the substrates for the case in which liquid crystal materials have negative dielectric anisotropy, and essentially perpendicular to the substrates for the case in which liquid crystal materials have positive dielectric anisotropy (page 7, lines 23-28, the electrodes being attached to both sides of the liquid crystal layer, thereby creating an electrical field perpendicular to the substrates) and optionally at least one double refracting layer (page 3, lines 5-6), the liquid crystal layer having an optical retardation in the range of $0.15\ \mu\text{m}$ to $0.35\ \mu\text{m}$, and preferably in the range of $0.20\ \mu\text{m}$ to $0.35\ \mu\text{m}$ (page 3, lines 25-26) (overlaps the claimed range) (In re Malagari, 499 F.2D 1297, 182 USPQ 549 (CCPA 1974)) and thus would have been obvious to optimize performance.

Accordingly, claims 1, 2, 5 and 21-24 are anticipated.

As to claim 3, Welzen discloses (page 3, lines 1-2) the use of a twisted liquid crystal and typically the twist angle of a liquid crystal layer falls within the claimed range and thus would have been obvious.

As to claim 4, Welzen also disclose that when an electrical current is applied to the liquid crystal molecules, they are perpendicular to the substrates. Therefore, it is clear from the description that the optical retardation in the substrate plane is switched to 0 nm.

As to claims 6 and 7, Welzen also discloses (page 3, lines 25-26) that the optical retardation of the liquid crystal layer is from 0.15 – 0.035 micron (overlaps the claimed range).

As to claim 8, Welzen discloses that the liquid crystal switching element also contains at least one birefringent layer (page 3, lines 5-6).

As to claims 9-11, Welzen further discloses that the optical retardation of $R_{1c} = 0.2134 \mu\text{m}$ corresponds to a λ plate at a wavelength range of $\lambda = 0.4268 \mu\text{m}$. Since the double refracting layers have a retardation of $R_{1c}/2$, these layers correspond to $\lambda/4$ plates.

As to claim 20, a person skilled in the art is well aware that a liquid crystal element having positive anisotropy and an electrical field perpendicular to the liquid crystal layer can be routinely substituted by a liquid crystal element having negative anisotropy and an electrical field parallel to the liquid crystal layer for higher contrast and thus would have been obvious.

8. Claims 1, 3 and 13-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al., (Sato), EP 0 463 816 A2.

9. Sato disclose an active matrix reflection type liquid crystal switching element comprising a liquid crystal layer having a starting orientation that essentially parallel to the substrates and essentially non-twisted (col. 1, lines 5-7, and col. 4, lines 42-46), at least a polarizer (col. 4, line 46), a device for producing an electrical field that is oriented essentially in parallel to the substrates for the case in which liquid crystal materials have negative dielectric anisotropy, and essentially perpendicular to the substrates for the case in which liquid crystal materials have positive dielectric anisotropy (col. 4, lines 32-34, the electrodes being attached to both sides of the liquid crystal layer, thereby creating an electrical field perpendicular to the substrates), the liquid crystal layer having an optical retardation in the range of 0.15 μm to 0.35 μm , and preferably in the range of 0.20 μm to 0.35 μm (col.12, lines 15 and 42-45, where a retardation of 0.14 μm is found) (overlaps the claimed range) (In re Malagari, 499 F.2D 1297, 182 USPQ 549 (CCPA 1974)) and thus would have been obvious to optimize performance.

Accordingly, claims 1 and 21-24 would have been obvious.

As to claim 3, Welzen discloses (page 3, lines 1-2) the use of a twisted liquid crystal and typically the twist angle of a liquid crystal layer falls within the claimed range and thus would have been obvious.

As to claim 13, Sato contains no birefringent layer.

As to claims 14, 16 and 18, Sato discloses the his invention is related to a reflection type liquid crystal apparatus using a twisted liquid crystal layer having positive dielectric anisotropy (col. 1, lines 5-7; col. 4, lines 43-45).

AS to claim 17, Sato further discloses that the liquid crystal switching element can be operated in normally white mode (col. 7, lines 47-50).

As to claim 15, Sato also discloses (col. 4, lines 32-34) that when an electrical current is applied, the liquid crystal molecules are perpendicular to the substrates, and therefore the optical retardation in the substrate plane is switched to 0 nm.

As to claim 19, a transmissive type liquid crystal display having the liquid crystal switching element is common and known in the art and thus would have been obvious to avail a proven device.

As to claim 20, a person skilled in the art is well aware that a liquid crystal element having positive anisotropy and an electrical field perpendicular to the liquid crystal layer can be routinely substituted by a liquid crystal element having negative anisotropy and an electrical field parallel to the liquid crystal layer for higher contrast and thus would have been obvious.

Allowable Subject Matter

10. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

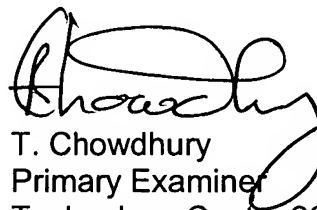
Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R Chowdhury whose telephone number is (703) 308-4115. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.



T. Chowdhury
Primary Examiner
Technology Center 2800

TRC
October 13, 2003